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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.: 10/807,018
Filed: March 23, 2004
For: Shingle With Sharply Defined Tabs Separated
by Slots and Method of Making
Inventors: Husnu M. Kalkanoglu, et al
Examiner: Parker, Frederick John
Art Unit: 1762
Atty. Doc. No.: 116-03

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Respectfully submitted,

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RESPONSE TO NOTIFICATION OF NON-COMPLIANT APPEAL BRIEF

This is in response to the Notification dated May 30, 2008. An amended Brief is herewith provided as suggested in the Notification containing the items addressed in numbered paragraphs 2, 4 and 10 of the Notification, along with attached Exhibits L, M and N.

No change was made to Exhibit O (the book of patents), so no new copy of such exhibit is necessary.

No fee is believed to be necessary. In the event that a fee is necessary, the commissioner is hereby authorized to charge such fee to Paul & Paul deposit account No. 16-0750.

Respectfully submitted,



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A. IDENTIFICATION PAGE

Serial No.: 10/807,018

Filed: March 23, 2004

For: Shingle With Sharply Defined Tabs Separated by Slots and Method of Making

Inventors: Husnu M. Kalkanoglu and Robert L. Jenkins

Examiner: Parker, Frederick John

Art Unit: 1792

Atty. Doc. No.: 116-03

APPEAL BRIEF

Volume 1 of 2, including Appendix Sections L, M and N.

Volume 2 includes Appendix Section O.

4) .

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C. REAL PARTY IN INTEREST

The real party in interest is CertainTeed Corporation, a corporation of Delaware, having a place of business in Valley Forge, Pennsylvania, the Assignee of this application and of the invention to which it relates. CertainTeed Corporation is a subsidiary of Saint Gobain Corporation, a corporation of Pennsylvania, having a place of business in Valley Forge, Pennsylvania. Saint Gobain Corporation is an indirectly wholly owned subsidiary of Compagnie de Saint Gobain, a French company headquartered in Paris, France.

D. RELATED APPEALS AND INTERFERENCE

None

E. STATUS OF CLAIMS

The claims in the application originally were claims 1-13.

Claims 1-11 stand finally rejected. Claims 1-11 are being appealed.

Claims 12 and 13 are cancelled.

F. STATUS OF AMENDMENTS

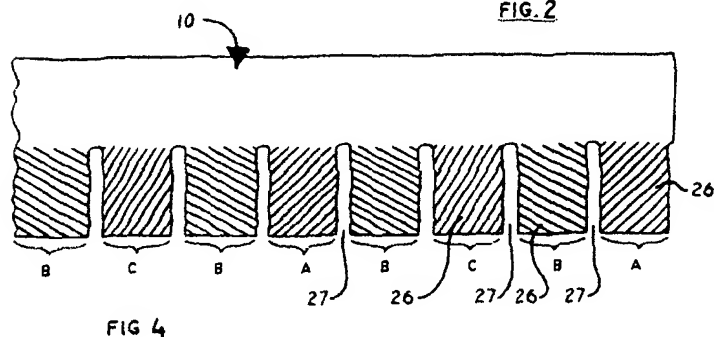
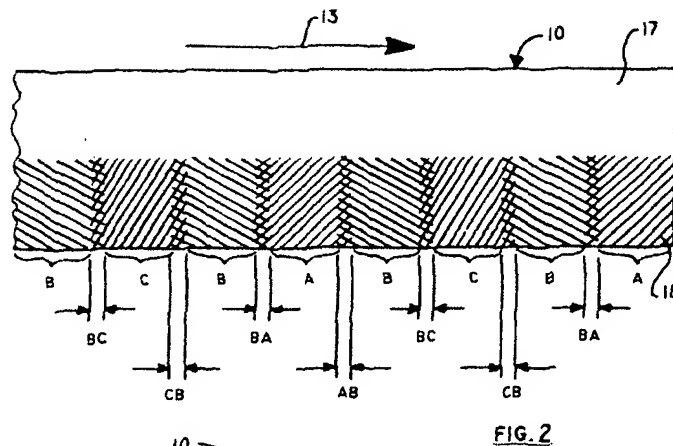
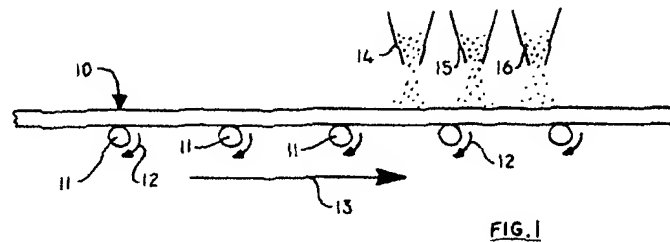
There were no amendments subsequent to the Final Rejection of February 6, 2008. The claims were last amended on December 22, 2006, in response to the Official Action of September 27, 2006.

G. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention is a method of making a shingle having multiple tabs separated by slots wherein adjacent tabs on each side of one or more slots have different aesthetics (for example, difference colors), and there are areas between where adjacent tabs are to be cut out to form slots, wherein aesthetics (such as colors) from the adjacent tabs are blended together. These blended-together areas are completely cut out when making the slots, such that the adjacent tabs are sharply defined in terms of their different aesthetics (such as color, gradation, etc.)

Independent claim 1, for example is directed to a method of making a shingle 40 with a butt portion 17 and a tab portion 18. The tabs in the tab portion are spaced apart by slots 27. Adjacent tabs having different aesthetics are sharply defined. The method

includes the steps of providing a web 10 of a hardenable adhesive-coated material to upper and lower surfaces (p. 4, L 2-7), with the web 10 being conveyed longitudinally (13 of Fig. 1; p. 4 L 10-14). Granules of a first aesthetic (A of Fig. 2; p. 4 L 17-27) are applied to a tab portion, and granules of a second aesthetic (B of Fig. 2; p. 4 L 17-27) are applied to another tab portion, and granules (B A of Fig. 2; p. 5 L 22-p. 6 L13) of a mixture of granules (B) and (A) are applied onto the tab areas in between the places where granules (A) and (B) were applied. Transverse slots 27 are then cut in the intermediate areas (Fig. 2 BA, AB or CB, BC; p. 4 L 22 to p. 5 L. 5), with the slots 27 being at least as wide as the intermediate areas leaving visually sharp, precise starting and ending delineations at the ends of the tabs remaining after the slots 27 are cut. See Figs. 1, 2 and 4 below.



Independent claim 3 is like independent claim 1, except that, instead of reciting that the slots that are cut are at least as wide as the intermediate areas, instead recites substantially the same thing in terms of completely removing the given width of the intermediate areas. Independent claim 3, is directed to a method of making a shingle 40 with a butt portion 17 and a tab portion 18. The tabs in the tab portion are spaced apart by slots 27. Adjacent tabs having different aesthetics are sharply defined. The method includes the steps of providing a web 10 of a hardenable adhesive-coated material to upper and lower surfaces (p. 4, L 2-7), with the web 10 being conveyed longitudinally (13 of Fig. 1; p. 4 L 10-14). Granules of a first aesthetic (A of Fig. 2; p. 4 L 17-27) are applied to a tab portion, and granules of a second aesthetic (B of Fig. 2; p. 4 L 17-27) are applied to another tab portion, and granules (B A of Fig. 2; p. 5 L 22-p. 6 L13) of a mixture of granules (B) and (A) are applied onto the tab areas in between the places where granules (A) and (B) were applied. The intermediate areas of given widths (Fig. 2 BA, AB or CB, BC; p. 4 L 22 to p. 5 L5 and Fig. 4) are completely removed.

Independent claim 5 is like each of independent claims 1 and 3, except that where the removal of the slots is recited, instead of reciting it as in claim 1, the removal of the slots is recited as completely removing the intermediate areas. Independent claim 5, is directed to a method of making a shingle 40 with a butt portion 17 and a tab portion 18. The tabs in the tab portion are spaced apart by slots 27. Adjacent tabs having different aesthetics are sharply defined. The method includes the steps of providing a web 10 of a hardenable adhesive-coated material to upper and lower surfaces (p. 4, L 2-7), with the web 10 being conveyed longitudinally (13 of Fig. 1; p. 4 L 10-14). Granules of a first aesthetic (A of Fig. 2; p. 4 L 17-27) are applied to a tab portion, and granules of a second aesthetic (B of Fig. 2; p. 4 L 17-27) are applied to another tab portion, and granules (B A of Fig. 2; p. 5 L 22-p. 6 L13) of a mixture of granules (B) and (A) are applied onto the tab areas in between the places where granules (A) and (B) were applied. The intermediate areas (Fig. 2 BA, AB or CB, BC; p. 4 L 22 to p. 5 L5 and Fig. 4) are completely removed.

Claim 2, dependent on claim 1, recites the application of a third aesthetic area (C of Figs. 2 and 4; p. 4 L 22 to p. 5 L 5).

Claim 4, dependent on claim 3, recites the application of a third aesthetic area (C of Figs. 2 and 4; p. 4 L 22 to p. 5 L 5).

Claim 6, dependent on claim 5, recites the application of a third aesthetic area (C of Figs. 2 and 4; p. 4 L 22 to p. 5 L 5).

H. GROUND OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether claims 1 through 7 and 11 are unpatentable over Koschitsky U.S. 5,664,385 under 35 U.S.C. §103(a);
2. Whether claims 8 through 10 are unpatentable over Koschitsky in view of the Admitted Prior Art under 35 U.S.C. §103(a). The Admitted Prior Art discloses that it is known to form laminated shingles from two or more layers of shingle components.

I. ARGUMENT: THE REJECTION OF CLAIMS 1-7 AND 11 UNDER 35 U.S.C. §103 (a) OVER KOSCHITSKY 5,664,385 IS REVERSIBLE ERROR

1. **It is reversible error as a matter of law to read into Koschitsky a critical feature of the invention that is not there and which Koschitsky teaches away from, over and over and over again.**

In the Final Rejection, the Examiner reads into Koschitsky the *complete* removal of the transition areas between the tabs of Koschitsky.

There is no such disclosure whatever in Koschitsky.

Rather, Koschitsky teaches away from the complete removal of the transition areas.

Koschitsky specifically wants the *opposite* of complete removal of the transition areas; namely to retain blended parts of the transition areas on each side of each of the slots.

Koschitsky goes on to state (Column 5, lines 17-18) "...remove **the part** of the transition area where the two blends are approximately equal." (emphasis added).

Again, in Column 5, lines 26-29 Koschitsky states that "...it will remove **portions** of the transition area 36 where the granules from each blend 26a", 26b" have approximately a 50:50 ratio (as indicated by point 80 in Fig. 4 of Koschitsky). (emphasis added).

Again, Koschitsky goes on to say in Column 5 lines 29+ that "...the **portion 36a** of the transition area to the left of the left hand slot 76 in Fig. 7 will be predominantly determined by the color of blend 26a", while **the portion 36b** of the transition area to the right of the left hand slot 76 will be largely determined by the color of blend 26b". (emphasis added).

Koschitsky continues to go on to say:

The portions 36a, 36b of the transition area which remain after the slot has been cut will not be noticed by the eye, because of the presence of the slot 76. (Column 5 lines 35-37)

Again, Koschitsky is clearly emphasizing that there will be portions of the transition area that are **not** removed.

Thus, over and over and over again Koschitsky emphasizes that there is only a portion of each transition area that is removed.

Moreover, if one wishes to fully understand the goal of Koschitsky, one should look to claim 1, which is the broadest claim for which protection has been sought by Koschitsky.

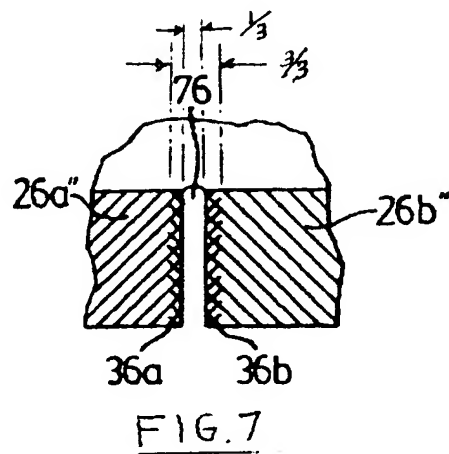
Claim 1, in Column 8 lines 11-16 states:

...each transition area also containing an intermediate portion between said border areas where granules from both said neighboring patches are present in substantial concentrations, said shingle having narrow slots between substantially all of said patches of granules...

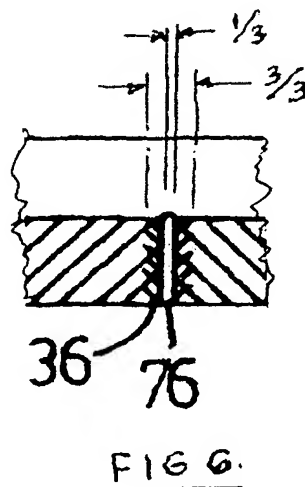
And lines 18-23 go on to state:

said slots extending **within** said intermediate portions of said transition areas but said transition areas **being of greater width than said slots so that there is a portion of a transition area on each side of each slot...**(emphasis added).

Additionally, if one looks to the drawings of Koschitsky, they also fully support that Koschitsky intends to retain some portions of the transition area on each side of the slot. See Fig. 7 of Koschitsky reproduced below, where Koschitsky shows that regions 36a and 36b are clearly noticeable as is shown by the hatch marks on each side of the slot. It is clear that the slot 76 of Koschitsky occupies only one third of the transition area and that an additional two thirds of the transition area is occupied by the remaining portions of the transition area that are **not** removed.



The same is true in the reproduced portion of Fig. 6 of Koschitsky below, where the slot 76 show hatched portions 36 of the transition area between adjacent tabs, and which are not removed.



In the illustrations from Koschitsky of Figs. 7 and 6 reproduced above, the undersigned has added lines and numbers showing that only about one third of each of the transition areas are removed.

In the Final Rejection, the Examiner states that column 5, line 4 + states “slots 76 are located in all or substantially all of the transition areas 36 between adjacent colored areas...” Such reference in Koschitsky to “all of the transition areas 36” refers to the **number** of areas; not the entire width of any given area.

The critical feature of complete removal of all of the transition areas is nowhere disclosed in Koschitsky and Koschitsky over and over and over again teaches away from such a feature. Doing what the prior art tries to avoid is the very antithesis of obviousness. *In re Buehler* 515 F.2d 1134, 1141 , 185 U.S.P.Q. 781, 787 (C.C.P.A. 1975).

It is submitted that the Examiner’s reading of Koschitsky is reversible error.

2. It is reversible error as a matter of law for the Examiner to misapply KSR as though Applicants were urging that “...a specific teaching, suggestion or motivation is required to establish a prima facie case of obviousness”, where Applicants make no such argument, and in the face of Applicants having already represented to the Examiner that they were not urging that a teaching is required, specifically citing KSR.

In numbered paragraph 4 of the Final Rejection, the Examiner states:

Applicants are reminded that KSR 82 USPQ2d 1396 forecloses the argument that a specific teaching, suggestion, or motivation is required to establish a prima facie case of obviousness.

But Applicants here do not argue that a specific teaching must be provided by the Examiner of making the modification that the Examiner would have to make to Koschitzky. Rather, Applicants here argue that Koschitzky itself leads away from the teaching of complete removal of the transitional areas.

In Applicants’ earlier remarks filed December 18, 2007, Applicants specifically pointed that out to the Examiner, but the Examiner has nevertheless repeated that argument in the Final Rejection.

3. It is reversible error as a matter of law for the Examiner to ignore that the Court in KSR repeated and reinforced the admonition from *Graham v. John Deere Co.* that the fact finder should "...guard against slipping into use of hindsight"...and should ... "resist the temptation to read into the prior art the teachings of the invention in issue".

In *KSR Int'l v. Teleflex Inc.*, 127 S. Ct. 1727, 82 USPQ2d 1385 (2007) the U.S. Supreme Court also cited *Graham v. John Deere Co.* 383 U.S. 1, 15 Led 2d 545, 86 SC 684 for the proposition that the fact finder should "guard against slipping into use of hindsight"...and should..." resist the temptation to read into the prior art the teachings of the invention in issue." It is submitted that this admonition from *Graham v. Deere* that is reinforced by the Supreme Court in the *KSR* decision is quite applicable here, and that the Examiner should resist reading into Koschitzky that which is taught by the Applicants in the instant application, especially where Koschitzky goes to such great lengths throughout its text and illustrations, to retain on each side of the slot, portions of the transition areas, and where Koschitzky in fact teaches the retention of most of every such transition area.

Complete removal of the intermediate areas is taught in Applicants' own disclosure which may not be relied upon, but apparently is being relied upon for a teaching of modifying Koschitsky, because, on this record, it is Applicants' application that teaches this feature.

4. It is reversible error as a matter of law for the Examiner to apply an out-dated, pre-1952 Patent Act test for patentability under *In re Seid* as though structural features having aesthetic purposes cannot be a basis for patentability in a utility patent.

On page 3 of the Final Rejection, the Examiner states:

Matters related to the choice of ornamentation producing no mechanical effect or advantage considered to constitute the invention are considered obvious and do not impart patentability, quoting *In re Seid* 73 USPQ 431

In re Seid was decided in 1947, more than 60 years ago, before the 1952 Patent Act. The 1952 Patent Act disposed of a prior collection of negative rules for patentability. Those negative rules do not exist today. Rather, the test for patentability under the 1952 Patent Act is that set forth in 35 U.S.C. §103, and is a test of obviousness versus unobviousness.

The Board of Patent and Appeals in *In re Seid* was addressing the pre-1952 standard of what constitutes invention, a test that has long been laid to rest. Actually, the Examiner has mis-quoted *In re Seid*. The Board in *In re Seid* was not addressing whether there was produced a new mechanical effect or advantage considered to constitute *the* invention. Rather, it was addressing whether the effect or advantage was considered to *constitute invention*, using the pre-1952 test for patentability. The full quote, accurately presented is:

The Board stated that the shape of the hollow member
“is a mere matter of choice in ornamentality and produces
no mechanical effect or advantage considered to constitute
invention”.

The Court of Customs and Patent Appeals in *In re Seid*, in affirming the Patent Office Board of Appeals, was applying the pre-1952 test for patentability as to whether or not the differences did “constitute invention” under the test at that time.

That is not the test today.

On page 6 of the Final Rejection, the Examiner again refers to *In re Seid*, again for the proposition that structural features that produce aesthetic differences are not patentable, suggesting that because they are aesthetic they are inherently obvious. But the Patent Office has been regularly granting patents on that basis for the last 50 years, as will be addressed in subparagraph 5, below.

Even if *In re Seid*, as addressed by the Examiner for the proposition that some functional feature is required for patentability in a utility patent was still viable law under 35 U.S.C. 103, that proposition is satisfied by the functional aspects of the invention at issue here.

Paragraphs 4 and 5 of the Snyder Declaration, of record, address at least nine functional features of the invention set forth in the claims. They are summarized here as follows, as producing a number of mechanical and functional effects and advantages.

In paragraph 4 of the Snyder Declaration, these mechanical and functional effects and advantages for the cutting of the slots are set forth as follows:

- (a) the cutting of the slots allows for thermal expansion of the tabs in the longitudinal direction under hot roof conditions, such as occurs in elevated temperature conditions, especially during summer in southern geographic areas of the U.S., allowing for leftward and rightward movement of the tabs, rather than buckling of the tabs;
- (b) the cutting of the slots prevents upward bowing of the exposed-wind-installed portion of the shingles under conditions of thermal expansion;
- (c) the cutting of the slots accommodates the shingles conforming to non-planar surface portions of roofs on which they are installed;
- (d) when shingles are being applied over other, pre-existing shingles in re-roofing conditions, the cutting of the slots accommodates the shingles conforming to surface irregularities of pre-existing shingled roofs, and
- (e) the cutting of the slots, at their upper ends, of a given course of shingles, helps in aligning a next-overlying course of shingles.

In paragraph 5 of the Snyder Declaration, these mechanical and functional effects and advantages are set forth as follows for the application of granules:

- (a) preventing ultraviolet UV radiation from degrading the asphalt;
 - (b) providing bulk and thickness to shingles that make them more difficult for wind to lift tabs thereof and possibly break the tabs, causing leakage;
 - (c) providing bulk to shingles for easier handling upon installation;
- and
- (d) providing an intermediate layer between overlapping shingles that prevents the asphalt layers on shingles from sticking together when adjacent shingles are packaged in overlying relation for shipment.

Accordingly, even under the now-extinct test of *In re Seid*, the claims of this application meet that test. The rejection of the claims under 35 U.S.C. 103, to the extent that it is based upon *In re Seid*, is submitted to be reversible error as a matter of law.

5. It is reversible error as a matter of law for the Examiner to dismiss out of hand the practice of the USPTO for the last 50 years since *In re Seid* and the evidence exemplified by the collection of 51 patents cited in the Snyder Declaration that recognize that ornamental and aesthetic features in utility patents for shingles are bases for patentability.

In paragraph 12 of the Snyder Declaration, of record, there are 51 patents listed, all directed to shingles or roof structures or the process of making them. Every one of these is directed to aesthetic or ornamental aspects of the shingles, because that has been the nature of shingle development for more than the last 50 years.

Typically, shingle development has been to make asphalt shingles, of either the single or multi-layer type, that simulate natural materials, such as simulating flagstone, cedar shakes, or tiles. Many of these inventions relate to producing some visual aspect of the shingle that simulates thickness where the shingles are actually thin. Others simulate curvature where there is no curvature. Others provide a rough appearance when they are not very rough. Others simulate alternating ridges and valleys. Others add shadow lines. Some simulate thatched roofs.

These simulations have been the nature of a large portion of shingle development, including development in the patent art, over many years. They accomplish this by building into the manufacture of a shingle some structural feature(s), not present in the art, that gives a different appearance.

The U.S. Patent Office has applied the standard of obviousness under Section 103 and in every one of the 51 cases listed in paragraph 12 of the Snyder Declaration, has concluded that the inventions listed have passed the tests for novelty and unobviousness, notwithstanding that the goal in each case has been to produce some ornamental or aesthetic feature.

While the Examiner, in the paragraph bridging pages 6 and 7 of the Final Rejection, notes the ornamentation effects of those inventions of the 51 patents listed in paragraph 12 of the Snyder Declaration, and has appreciated the well written and concise summary of those developments **having aesthetic purposes**, the Examiner nevertheless seeks to collectively distinguish all of those from the invention at issue here by concluding at the outset that those 51 items are “inventive methods for forming unexpected appearances for roofing” and assumes the conclusion with respect to the

invention at issue here, concluding that such is “only an obvious variation of what the prior art already teaches”, **simply because the present invention has an aesthetic purpose.**

It is submitted that *In re Seid* presents no basis for ignoring the complete removal of the transition areas to get the aesthetic effect that such produces any more than *In re Seid* would have been a basis for ignoring the structural features of the various 51 patents cited, that produced the ornamental and aesthetic effects set forth as being desirable for those 51 patents collected and referenced in paragraph 12 of the Snyder Declaration.

It is submitted that it is reversible error for the Examiner to have applied a different legal standard for the applicant here than the Patent Office has been applying for more than the last 50 years in the roofing art.

Under the Examiner’s application of *In re Seid*, even the Koschitsky invention of U.S. patent 5,664,385, would be precluded from patentability, because the structural feature of that invention, addressed over and over and over in Koschitsky, is to remove a portion of the transition areas of adjacent tab portions (to accentuate the visual demarcation between adjacent differently colored areas of granules). Thus, Koschitsky would also be barred from patentability under the Examiner’s proposed, improper application of the pre-1952 Act test for whether or not the differences between Koschitsky and the prior art “constitute invention”.

6. It is reversible error as a matter of law for the Examiner to misstate the opinion of Mr. Snyder that the present invention is not obvious because it is not “expressly” taught in the art; rather, Mr. Snyder testified that the invention is not obvious over Koschitsky based upon his 34 years experience in this art.

On page 7 of the Final Rejection, the Examiner misstates Mr. Snyder’s opinion to the effect that Mr. Snyder supposedly states that the “...instant claims are not obvious because they are not expressly taught in the prior art”, citing paragraph 21 of the Snyder Declaration.

That is not what Mr. Snyder attested to. He did not base his opinion on the fact that they were not “expressly” taught in the prior art.

Rather, he testified:

Considering the failure of Koschitzky and the other art

referenced in paragraph 12 of this Declaration to teach the present invention, it is my opinion based upon my experience in the shingle art that this invention is not obvious.

Thus, Mr. Snyder's opinion as to non-obviousness was ¹ not in any respect based upon the fact that the particular novelty of this invention was not *expressly* taught in the prior art. Rather, it was an opinion based upon his intimate involvement in the roofing industry for over 34 years, being very familiar with patents in the roofing industry, and being a patentee himself, as addressed in numbered paragraph 1 of his declaration.

It is submitted that it was reversible error for the Examiner to Final Reject the claims of this application based upon the narrow basis for a holding of non-obviousness that was not the basis for Mr. Snyder's opinion. Mr. Snyder's opinion was not limited to "expressly"; rather, it is based upon his broad experience over many years in the shingle art.

7. It is reversible error as a matter of law for the Examiner to dismiss the evidence of commercial success as a secondary consideration under *Graham v. John Deere Co.* Having first dismissed the evidence of commercial success provided by Mr. Snyder on the grounds that potential factors of promotion, advertising and marketing were not addressed, the Examiner then ignores the evidence provided by Mr. Jenkins that the factors of promotion, advertising and marketing were the same for the shingle of this invention as for the comparison commercially successful shingle. Nowhere does the Examiner address that his earlier concern as to these factors were fully answered in a subsequent declaration.

Evidence of commercial success was provided to the Examiner in paragraph 20 of the Snyder Declaration. The evidence was predicated upon a comparison of the commercial success of a product made in accordance with the claims of the instant application, with another shingle of CertainTeed that has been a commercial success over 15 years. The commercial success enjoyed by the shingle of the instant

1. In paragraph 14 of the Snyder Declaration, there is a typographical error in line 6, where "incomplete" was mistakenly typed as "complete". The next 4 lines of that paragraph makes it clear that Mr. Snyder was testifying that the Koschitsky removal of the intermediate areas was incomplete, as does the last four lines of paragraph 18 of the Snyder Declaration.

invention over less than 4 years, compared with the 15 year period for the comparison shingle, was referred to by Mr. Snyder as “stunning”. Mr. Snyder summarized that “stunning” success as follows:

In the short period of time that the shingle of this invention has been on the market, its year-to-date sales volume, as measured in squares, is already over 80% of the year-to-date volume of the other successful shingle that has been on the market for 15 years.

The Examiner had taken the position that Mr. Snyder had not addressed other possible considerations, such as promotion/advertising, market share, etc.

In response to that, a Declaration of Robert L. Jenkins was submitted, also a person of considerable experience, having spent over 25 years in the shingle industry, who also testified to his considerable experience with shingles in general, and his familiarity with shingles in accordance with this invention, in numbered paragraph 2 of his Declaration.

Regarding the factors of promotion, advertising and marketing, Mr. Jenkins testified that those factors were the same for the shingle of this invention as for the comparison shingle addressed by Mr. Snyder, as follows, in paragraph 5 of his declaration:

The factors of promotion, advertising and marketing that took place for the shingle of this invention from prior to its commercial release and thereafter were essentially the same as those factors for the comparison commercially successful shingle of CertainTeed to which the shingle of this invention is compared in paragraph 20 of the Snyder Declaration.

Thus, the testimony of Mr. Jenkins took out of play those factors that the Examiner had raised as not previously being addressed, as possibly having some meaning relative to the commercial success of the shingle of this invention, and established that these factors had no meaning for this invention.

However, in the Final Rejection the Examiner ignored the Declaration of Mr. Jenkins, making no mention of it whatever, and giving apparently no weight whatever to the fact that there were no differences in the levels of advertising, promotion, marketing,

etc. between the shingle of this invention which had its “stunning” commercial success, and the commercial success of the comparison shingle addressed by Mr. Snyder.

It is submitted that it is reversible error as a matter of law for the Examiner to have either ignored or dismissed out of hand the commercial success as a secondary consideration under *Graham v. Deere Co.* in support of patentability.

For all of the reasons set forth in subsections 1-7 of Argument section I, reversal of the Final Rejection of claims 1-7 and 11 over Koschitsky under 35 U.S.C. §103(a) is believed to be in order.

Claims 1,3 and 5 stand together, all requiring, by slightly different wording, the complete removal of the intermediate areas. Claims 2, 4 and 6 depend respectively on claims 1, 3 and 5 and add third primary (tab) areas to the first and second primary areas. Claims 2, 4 and 6 stand with claims 1, 3 and 5. Claim 7 adds to claims 1, 3 and 5 the cutting of the web into shingles and stands with claims 1, 3 and 5. Claim 11 depends from claim 7 and requires a varied parameter from tab to tab, such as tab length, tab width or slot width. Claim 11 stands with claim 7.

J. ARGUMENT: THE REJECTION OF CLAIMS 8-10 UNDER 35 U.S.C. §103 (a) OVER KOSCHITSKY 5,664,385 IN VIEW OF THE ADMITTED PRIOR ART IS REVERSIBLE ERROR

All of sections 1-7 of Argument section I, dealing with the deficiencies of Koschitsky as a basis for rejection are herein incorporated by reference.

The Examiner adds to Koschitsky the teaching from the Admitted Prior Art that laminated shingles can be made from two or more shingle layers.

However, claim 8 depends from and includes all of the limitations of claim 7, which, in turn, depends from and includes all of the limitations of any one of claims 1, 3 and 5, and additionally requires that there be a second layer of impregnated reinforcing material with granules thereon to the base web of impregnated reinforcing material with granules thereon, to make a laminated shingle.

In Exhibit B to the Snyder Declaration filed August 24, 2007, there is provided an actual specimen of a shingle of this invention, in which such a laminated layer is applied to the rear of the layer having slots therein. A photograph of that Exhibit B is provided in Exhibit C to the Snyder Declaration, also showing the lamination behind the main layer of shingle material.

In each of Exhibits B and C to the Snyder Declaration, the granules appearing on the rear layer of shingle material are very dark. This enhances the aesthetic effect provided by the shingles made in accordance with any of claims 1, 3 and 5, where the sharp, precise lines of delineation that are made possible by removal of the complete intermediate areas when the slots are made in the top shingle layer, allow for the granules on the top surface of the rear shingle layer to appear in the slot, thereby providing an enhanced aesthetic feature of the invention due to the combination of the granules on the front surface of the rear layer of shingle material being visible through the slots in the front layer of shingle material that completely remove the intermediate layer.

This presents an additional reason for patentability of claim 8 over and above the reasons advanced above with respect to the patentability of independent claims 1, 3 and 5.

Claim 9 adds to claim 8 the feature that the second layer (the rear layer shown in Exhibits B and C of the Snyder Declaration) is applied after the intermediate areas of the front shingle layer are removed. This is a process limitation that further limits the scope

of claim 8, disclosed nowhere in the art of record. Thus, claim 9 contains a limitation that presents an additional reason for patentability, over and above that of claim 8.

Claim 10 likewise includes a process limitation, but wherein the second layer of impregnated reinforcing material with granules is applied before the intermediate areas are removed, thus further limiting the scope of claim 8, but in a different sequence than that set forth in claim 9. Nowhere in the art of record is the sequence required by claim 10 disclosed. Therefore such presents an additional reason for the allowance of claim 10, over and above claim 8.

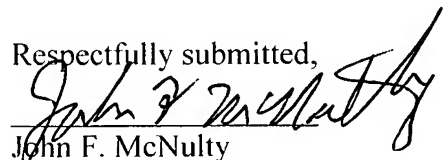
For the reasons advanced above, it is submitted that the rejection under Section 103 over Koschitsky in view of the Admitted Prior Art, is reversible error and those claims should be allowed as well.

K. CONCLUSION

The rejections of the claims of this application under 35 §U.S.C. 103 are in error as a matter of law and should be reversed.

For the reasons set forth in the Argument sections I and J above, the rejections should be reversed as a matter of law and the application proceed to issuance.

Respectfully submitted,


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L. CLAIMS APPENDIX

An accurate copy of claims 1-11 of this application is herewith presented:

1. A method of making a shingle having a butt portion and a tab portion with tabs of desired aesthetic in the tab portion being spaced apart by slots, and with adjacent tabs being sharply defined, comprising the steps of:

- (a) providing a base web of reinforcing material impregnated with and coated with an adhesive material as a hardenable coating, to an upper surface and a lower surface thereof;
- (b) conveying the impregnated reinforcing material in a longitudinal direction;
- (c) applying granules of a first aesthetic onto the hardenable coating on the upper surface in first primary areas, each of a first width, in the tab portion of the continuous strip of shingle material, to cover said first primary areas;
- (d) applying granules of a second aesthetic onto the hardenable coating of the upper surface in second primary areas, each of a second width, in the tab portion of the continuous strip of shingle material, to cover said second primary areas; and
- (e) applying granules of a mixture of those applied to adjacent primary areas, onto the hardenable coating in intermediate areas between said adjacent primary areas, each intermediate area being of a given width; and
- (f) cutting generally transverse slots of a predetermined size in said tab portion so that each said slot is at least as wide in the longitudinal direction as the width of the entire intermediate area in which it is located, to remove said given width of intermediate areas, leaving visually sharp, precise starting and ending delineations at each longitudinal end of each of said primary areas, with granules of a given aesthetic in each primary area being spaced apart on longitudinally opposite sides of a said slot.

2. The method of claim 1, including the step of:

- (g) applying granules of a third aesthetic onto the hardenable coating of the upper surface in third primary areas, each of a third width, in the tab

portion of the continuous strip of shingle material, to cover said third primary areas.

3. A method of making a shingle having a butt portion and a tab portion with tabs of desired shading in the tab portion being spaced apart by slots, and with adjacent tabs being sharply defined, comprising the steps of:

- (a) providing a base web of reinforcing material impregnated with and coated with an adhesive material as a hardenable coating, to an upper surface and a lower surface thereof;
- (b) conveying the impregnated reinforcing material in a longitudinal direction;
- (c) applying granules of a first aesthetic onto the hardenable coating on the upper surface in first primary areas, each of a first width, in the tab portion of the continuous strip of shingle material, to cover said first primary areas;
- (d) applying granules of a second aesthetic onto the hardenable coating of the upper surface in second primary areas, each of a second width, in the tab portion of the continuous strip of shingle material, to cover said second primary areas; and
- (e) applying granules of a mixture of those applied to adjacent primary areas, onto the hardenable coating in intermediate areas between said adjacent primary areas, each intermediate area being of a given width; and
- (f) completely removing said given width of intermediate areas.

4. The method of claim 3, including the step of:

- (g) applying granules of a third aesthetic onto the hardenable coating of the upper surface in third primary areas, each of a third width, in the tab portion of the continuous strip of shingle material, to cover said third primary areas.

5. A method of making a shingle having a butt portion and a tab portion with tabs of desired shading in the tab portion being spaced apart by slots, and with adjacent tabs being sharply defined, comprising the steps of:

- (a) providing a base web of reinforcing material impregnated with and coated with an adhesive material as a hardenable coating, to an upper surface and a lower surface thereof;
- (b) conveying the impregnated reinforcing material in a longitudinal direction;
- (c) applying granules of a first aesthetic onto the hardenable coating on the upper surface in first primary areas, each of a first width, in the tab portion of the continuous strip of shingle material, to cover said first primary areas;
- (d) applying granules of a second aesthetic onto the hardenable coating of the upper surface in second primary areas, each of a second width, in the tab portion of the continuous strip of shingle material, to cover said second primary areas; and
- (e) applying granules of a mixture of those applied to adjacent primary areas onto the hardenable coating in intermediate areas between said adjacent primary areas; and
- (f) completely removing said intermediate areas.

6. The method of claim 5, including the step of:

- (g) applying granules of a third aesthetic onto the hardenable coating of the upper surface in third primary areas, each of a third width, in the tab portion of the continuous strip of shingle material, to cover said third primary areas.

7. The method of any one of claims 1, 3 or 5, including the step of cutting the impregnated web with granules into separate shingles of predetermined lengths.

8. The method of claim 7, including the step of applying a second layer of impregnated reinforcing material with granules thereon to the base web of impregnated reinforcing material with granules thereon, to make a laminated shingle.

9. The method of claim 8, wherein the second layer of impregnated reinforcing material with granules thereon is applied after said intermediate areas are removed.

10. The method of claim 8, wherein the second layer of impregnated reinforcing material with granules thereon is applied before said intermediate areas are removed.

11. The method of claim 7, wherein said tabs of desired aesthetic have a varied parameter from one tab to another, said varied parameter being selected from the group of tab shape, tab length, tab width and slot width.

12. (Cancelled)

13. (Cancelled)

M. EVIDENCE APPENDIX

The evidence appendix includes the following:

- M1. Declaration of Richard Allan Snyder of August 17, 2007, and Exhibits A-C thereto.
- M2. Declaration of Robert L. Jenkins of December 17, 2007.
- M3. Copy of Koschitsky patent 5,664,385.
- M4. Copies of pages 1 and 2 of the instant patent application as filed, containing the “Admitted prior Art” relied upon by the Examiner for the rejection of claims 8-10 under 35 U.S.C. §103(a) as being unpatentable over Koschitsky in view of the Admitted prior Art.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT

Serial No.: 10/807,018

Filed: March 23, 2004

For: Shingle With Sharply Defined Tabs Separated by Slots and Method of Making

Inventors: Husnu M. Kalkanoglu, et al

Examiner: John Frederick Parker

Art Unit: 1762

Atty. Doc. No.: 116-03

DECLARATION OF RICHARD A. SNYDER UNDER 37 C.F.R. § 132

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

1. I, Richard Allan Snyder, have been intimately involved with the roofing industry for over 34 years. I am very familiar with patents in the roofing industry and am a patentee on 2 such patents. A brief copy of my curriculum vitae is attached hereto as Exhibit A.

2. I am an employee of CertainTeed Corporation, the assignee of the above application. I am not a co-inventor of the above patent application, and I have no economic interest in the obtaining of a patent on this application.

3. I am familiar with the above patent application and the basis for rejection of it as set forth in the Official Action (Final Rejection) of March 2, 2007 and in the Advisory

Action of June 1, 2007, as well as the reference to Koschitzky and the Admitted Prior Art (APA) of pages 1-2 of this patent application.

4. The cutting of the slots of a given width that are referred to in clause (f) of claim 1 of the present application and that are completely removed as are referred to in clause (f) of each of claims 4 and 5 constitute parts of the claimed invention producing a number of mechanical and functional effects and advantages, including:

- (a) the cutting of the slots allows for thermal expansion of the tabs in the longitudinal direction under hot roof conditions, such as occurs in elevated temperature conditions, especially during summer in southern geographic areas of the U.S., allowing for leftward and rightward movement of the tabs, rather than buckling of the tabs;

- (b) the cutting of the slots prevents upward bowing of the exposed-wind-installed portion of the shingles under conditions of thermal expansion;

- (c) the cutting of the slots accommodates the shingles conforming to non-planar surface portions of roofs on which they are installed;

- (d) when shingles are being applied over other, pre-existing shingles in re-roofing conditions, the cutting of the slots accommodates the shingles conforming to surface irregularities of pre-existing shingled roofs, and

- (e) the cutting of the slots, at their upper ends, of a given course of shingles, helps in aligning a next-overlying course of shingles.

5. The steps of applying granules referred to in clauses (c) and (d) of claim 1, clause (g) of claim 2, clauses (c) and (d) of claim 3, clause (g) of claim 4, clauses (c) and (d) of claim 5 and clause (g) of claim 6 constitute parts of the claimed invention, producing a number of mechanical and functional effects and advantages, including:

- (a) preventing ultraviolet (UV) radiation from degrading the asphalt;

- (b) providing bulk and thickness to shingles that make them more difficult for wind to lift tabs thereof and possibly break the tabs, causing leakage;

- (c) providing bulk to shingles for easier handling upon installation;

and

(d) providing an intermediate layer between overlapping shingles that prevents the asphalt layers on shingles from sticking together when adjacent shingles are packaged in overlying relation for shipment.

6. In the roofing industry, for many years, the thrust of shingle developments and improvements has been to make manufactured asphalt shingles that, when laid up on a roof, give, to varying extents, appearances similar to shingles traditionally made of natural materials, especially slate shingles, shake shingles (e.g. cedar shakes) and tile shingles.

7. Such manufactured asphalt shingles are generally of multi-tab construction (usually 3 or 4 tabs to simulate individual shingles, tiles, or shakes), and a roof covered by manufactured asphalt shingles can cost considerably less than one covered with natural shingles, such as slate, tile, and cedar shakes.

8. Examples of shingle developments that effect the appearance of natural materials are laminated asphalt layers on shingles to provide thickness, overlay (a layer of additional asphalt and granules) areas on shingles to provide thickness, dark horizontal lines on tabs of shingles to simulate individual natural shingles by providing differently colored granules on different adjacent tabs of the same multi-tab shingle, to give the illusion of thickness, irregular cuts on lower edges of tabs to simulate irregularities of natural materials, to mention a few of such developments.

9. There are many other such shingle developments that have been made over the years, aimed at simulating the appearance of natural materials, and they are not regarded in the shingle trade as being obvious ornamentation. To the contrary, the industry has invested heavily in processes and structural changes in manufactured shingles, through untold numbers of teams of engineers throughout the shingle industry working on such developments, and many millions of dollars have been spent, with the goal of making improvements that simulate natural materials through manufactured asphalt shingles.

10. The developments and investments referred to in paragraph 6-9 above have resulted in, and continually result in, issued U.S. patents granted because of the effects that are created in giving the appearance, in different ways, of natural roof covering materials, to manufactured asphalt shingles.

11. U.S. patent 5,664,385 to Koschitzky, cited in this application file, is an example of simulated individual natural shingles by having differently colored adjacent tabs on the same shingle by using slots to provide "an accentuated visual demarcation between adjacent patches of granules" (see Claim 1 and Summary of Invention thereof). The claims of that patent were not refused as an obvious modification simply because they were aimed at providing "...an accentuated visual demarcation between adjacent patches of granules" [i.e., they were for decorative or aesthetic purposes].

12. I have observed over many years that, in the shingle art, the U.S. Patent Office regularly issues utility patents that are in the category that is specifically directed to aesthetic or ornamental aspects of shingles and that such satisfies any requirement of mechanical function, such as giving manufactured asphalt multi-tab shingles the appearance of natural materials or for the purpose of providing other aesthetic or ornamental effects. Examples of such patents are the following, all of which are in this category:

- U.S. patent 4,130,974 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, "simulating a row of wooden shingles";
- U.S. patent 4,207,936 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, texturing the surface of wood to provide a rough appearance;
- U.S. patent 4,274,243 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to simulate a series of alternating ridges and valleys of a portion of a tile covered roof;
- U.S. patent 4,366,197 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to simulate a plurality of shingle elements laid side-by-side;

- U.S. patent 4,402,169 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide an aesthetically attractive shadow line to simulate thickness;
- U.S. patent 4,416,940 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, for imparting a simulated weathered-copper appearance to a substrate;
- U.S. patent 4,434,589 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide a decorative appearance that somewhat resembles that of a shake roof ridge cover;
- U.S. patent 4,439,955 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide a decorative appearance that somewhat resembles that of a shake roof ridge cover;
- U.S. patent 4,583,344 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to simulate a thatched roof;
- U.S. patent 4,611,451 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to simulate a thatched roof;
- U.S. patent 4,672,790 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide a three-dimensional highly textured appearance;
- U.S. patent 4,739,603 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to simulate a thatched roof;
- U.S. patent 5,186,980 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide a varied appearance for the shingles of a bundle when installed on a roof;
- U.S. patent 5,232,530 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to enhance the appearance of a roof by providing enhanced relief;

- U.S. patent 5,305,569 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide a pleasing layered appearance to the roof;
- U.S. patent 5,375,387 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to simulate an authentic roof;
- U.S. patent 5,426,902 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide visually sharp, precise delineation between zones of lighter and darker shading;
- U.S. patent 5,595,036 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide roof shingles which appear decorative and stylish and to provide a visually attractive appearance simulating an impression of thicker shingles;
- U.S. patent 5,611,186 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide the appearance of depth or thickness often associated with wood shingles;
- U.S. patent 5,660,014 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide visually sharp, precise lines of delineation between portions of lighter and darker shadings;
- U.S. patent 5,666,776 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide an appearance of shingle depth created by the combined visual appearance of the color contrasts and gradations provided the different shingle sheets;
- U.S. patent 5,901,517 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide visually sharp, precise delineation between zones of lighter and darker shading;
- U.S. patent 6,014,847 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to produce staggered shadow lines which enhance the three-dimensional appearance of a roof surface upon which the shingles are applied;

- U.S. patent 6,025,052 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to realistically resemble the appearance and texture of natural slate;
- U.S. patent 6,125,602 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to give the resulting roof having such ridge covers thereon a pronounced three-dimensional appearance;
- U.S. patent 6,174,403 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to create a pleasing color contrast and accentuate the difference in elevation between the shingle layers and to present a random or non-random color pattern;
- U.S. patent 6,182,400 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to create a ridge cover having an appearance similar to that of a shake shingle roof;
- U.S. patent 6,190,754 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide color gradation from light to dark across a shingle;
- U.S. patent 6,195,951 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide a shingle with visually sharp, precise delineations between zones of lighter and darker shading;
- U.S. patent 6,212,843 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to yield the appearance of shingles that are thicker than they actually are, with transverse shadow lines;
- U.S. patent 6,226,949 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to have the roofing materials simulate natural thatch material;
- U.S. patent 6,289,648 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide color gradations on portions of the shingle;

- U.S. patent 6,305,138 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide visually sharp, precise delineation between zones of lighter and darker shading;
- U.S. patent 6,361,851 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide a visually distinguishable difference in texture between different portions of the shingle;
- U.S. patent 6,419,780 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide a wide variety of aesthetic effects by varying the color formulation of the granules on the shingle;
- U.S. patent 6,455,113 is for the purpose of making a shingle or tile structure directed to aesthetic or ornamental aspects of shingles; namely, to create a smooth continuous snow drift appearance when the tiles are affixed to a surface;
- U.S. patent 6,467,235 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to yield the appearance of multi-tab shingles that are thicker than they actually are, with transverse shadow lines;
- U.S. patent 6,523,316 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide visually sharp, precise delineation between zones of lighter and darker shading;
- U.S. patent 6,607,781 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide a decorative metallic appearance and enhanced stability against degradation of color;
- U.S. patent 6,679,020 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, for enhancement of the shingle's visual appeal and thickness;
- U.S. patent 6,679,308 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, for enhancement of the shingle's visual appeal and thickness;
- U.S. patent 6,684,587 is for the purpose of making a shingle structure directed to aesthetic or ornamental aspects of shingles; namely, so that the shingle

impressions and the multiple shingle impression courses give the appearance that the corner piece substantially blends into siding panels;

- U.S. patent 6,698,151 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, so that the shingles optically simulate a tiled roof;
- U.S. patent 6,715,252 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide visually sharp, precise delineation between zones of lighter and darker shading;
- U.S. patent 6,823,637 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, so that a shading area having granules of different color or shade in appearance than other portions of the shingle, are provided;
- U.S. patent 6,907,702 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to give the appearance of shingles having different lengths;
- U.S. patent 6,920,730 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, for enhancement of the shingle's visual appeal and thickness;
- U.S. patent 6,983,571 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, so that the construction panel imitates the appearance of tile, naturally occurring shingles, or shakes, or slate;
- U.S. patent 7,073,295 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, to provide the shingle with an appearance of depth and thickness at adjacent shingle ridge covers on a roof;
- U.S. patent 7,117,652 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, so that the thatch roofing members appear to be thicker than in actuality;
- U.S. patent 7,240,462 is for the purpose of making a shingle or roof structure directed to aesthetic or ornamental aspects of shingles; namely, so that the

overlay shading area of the shingle is darker in appearance than a portion of a remainder of the overlay member;

The granting of patents because of ornamental or aesthetic features that are enabled by structural features of the shingles that produce such ornamental or aesthetic features has thus been the practice of the U.S. Patent Office for more than the last 30 years.

13. Attached hereto as Exhibits B and C are, respectively, a partial specimen and a photograph of a partial specimen of a 4-tab shingle made in accordance with the method of at least claims 1-8 of the present patent application. It can readily be seen that the entire intermediate area between adjacent tabs is removed by the cutting away of material that was otherwise in the slot of a given width, to leave visually sharp, precise starting and ending delineations at the ends of the tabs [or primary] areas. Thus, the tabs are sharply defined.

14. In contrast to the shingle of Exhibits B and C, the shingle of Koschitzky '385 purposely and intentionally leaves portions of the intermediate areas on each side of the tabs. I note that, repeatedly, throughout the specification and claims of Koschitzky, such remaining intermediate portions of the areas are shown as intermediate areas 36a and 36b of Fig. 7 of Koschitzky. I also note that throughout the Koschitzky patent, Koschitzky repeatedly discusses the complete removal of intermediate areas. Thus, while having the goal of producing shingles which accentuate the visual demarcations between adjacent differently colored tab areas of granules, Koschitzky cannot effectively do so, because a significant percentage of similarly colored granules on the tab at one side of the slot is present in the granules on the tab at the opposite side of the slot.

15. I am aware that the test for whether or not an invention is obvious includes a determination of the scope and content of the prior art, a determination of the differences between the prior art and the claims under consideration, and a determination of the level of ordinary skill in the pertinent art.

16. The patents that I have provided in paragraph 12 of this declaration, are representative of the scope and content of the prior art. They do not teach the subject matter of the claims of the present application as set forth in the amendment of December 22, 2006 in this application, even though, in virtually every instance, they are directed to providing aesthetic features that tend to simulate natural materials, such as individual slates, individual tiles, or cedar shakes via manufactured multi-tab asphalt shingles.

17. The differences between the prior art and the claims at issue are as set forth in the claims present in the application, and include the failure of the prior art to have intermediate granule areas (having a combination of granules of different aesthetics in adjacent tabs) that are completely removed by cutting slots between the shingle areas that comprise the adjacent tabs. Each slot completely removes the intermediate combinations of granules on each side of the slot.

18. In my experience over many years, the level of ordinary skill in the art is most often a person with a college degree and a number of years of experience in the shingle art. I note that, notwithstanding this level of skill in the art, the prior art has failed to arrive at the shingles that are made in accordance with the instant invention. In fact, the inventor Koschitzky of U.S. patent 5,664,385, the reference upon which the rejection in this case is based, is well known in the shingle industry and is a patentee in the U.S. and Canada. The Assignee of the '385 patent, IKO Industries Ltd., is a Canadian company which claims to have over 3,000 employees. Notwithstanding that, it is apparent from the U.S. patent 5,644,385 to Koschitzky that portions of the intermediate granule areas comprising mixtures of granules from adjacent tabs of different colors or aesthetics are present on each side of the slot of a multi-tab shingle. Koschitzky clearly did not solve the problem of having clear lines of demarcation resulting in a sharpness in the different color or aesthetic configurations from tab-to-tab, to give the appearance of completely different and separate shingles or tiles, from tab-to-tab across a shingle; rather, Koschitzky has some portion of the intermediate area that has in it granules from adjacent tabs, on each side of the slot, thereby necessarily resulting in a blended zone on each side of the slot, rather than simulating the appearance of uniquely colored, separate slates, tiles, cedar shakes or the like.

19. It is therefore evident that Koschitzky does not disclose the present invention, and the present invention would not be obvious from Koschitzky.

20. Shingles made in accordance with this patent application have enjoyed surprisingly rapid commercial success. For example, comparing the commercial success of this laminated shingle of CertainTeed which has been commercially sold for less than 4 years, with another laminated shingle of CertainTeed that has been a commercial success over about a 15 year period is stunning. In just this short sales period this shingle has already achieved a level of sales (in the millions of dollars) which is unusual. In the shingle art, the volume of shingle sales is usually measured in "squares", with one square of shingles covering 100 square feet of roof. In the short period of time that the shingle of this invention has been on the market, its year-to-date sales volume, as measured in squares, is already over 80% of the year-to-date volume of the other successful shingle that has been on the market for 15 years.

21. Considering the failure of Koschitzky and the other art referenced in paragraph 12 of this Declaration to teach the present invention, it is my opinion based upon my experience in the shingle art that this invention is not obvious.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

August 17, 2007
Date

Richard Allan Snyder
Richard Allan Snyder

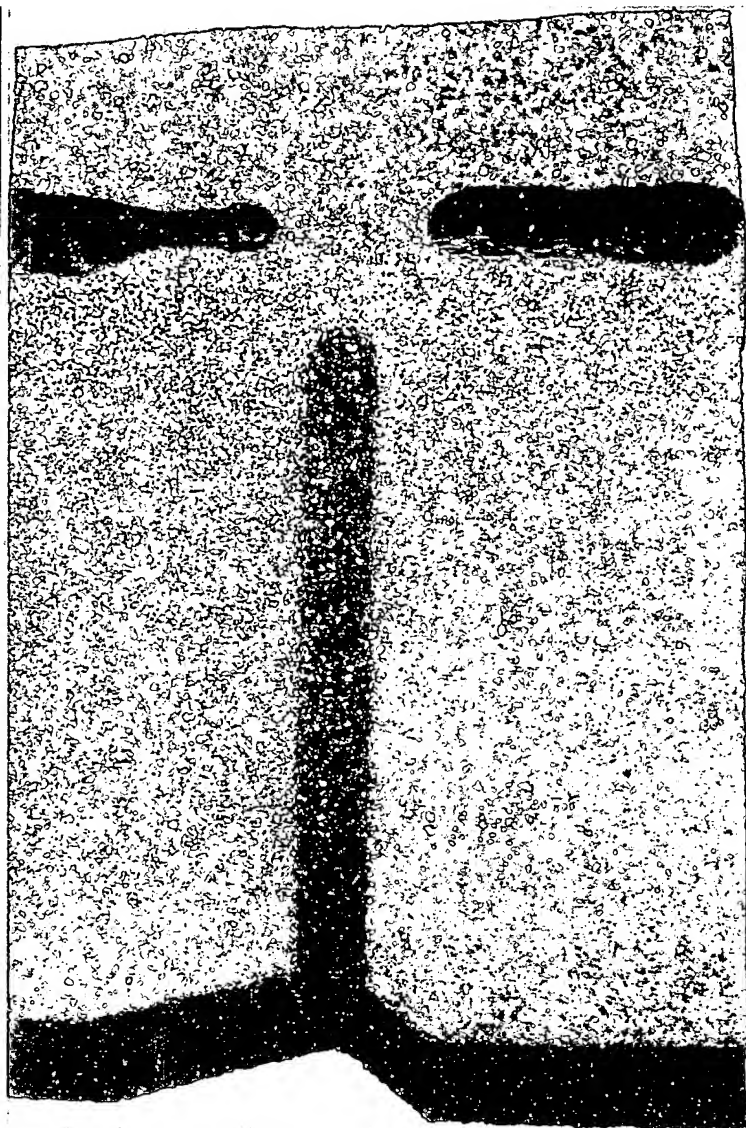
Richard Allan Snyder
Manager, Roofing Product Compliance
CertainTeed Corporation, Blue Bell, PA

Richard (Allan) Snyder has been a member of the asphalt roofing industry for 34 years, since graduating with a Master's degree in Chemical Engineering from Rutgers University. He has held positions in Product Development, Product Compliance, Technical Service, Specifications, and Packaging Design at CertainTeed supporting all varieties of asphalt roofing products including shingles, built-up roofing, modified bitumen roofing membranes, adhesives, and roof coatings. He is co-author of CertainTeed's unique and well-respected "Shingle Applicator's Manual" and "Shingle Technology Manual". Allan is currently Manager of Roofing Product Compliance at CertainTeed Corporation, located in Blue Bell Pennsylvania. He is named co-inventor on two issued patents related to roofing. Allan's technical background, extensive experience with testing of roofing products and systems, and meticulous attention to detail have provided valuable technical leadership within CertainTeed and also to a number of industry organizations.

Allan has remained intensely involved in the roofing industry by participating in a number of key organizations including ARMA, CRRC, CSA, ICC, NRCA, RICOWI, and UL's Standards Technical Panel. He has co-authored articles for ARMA (Asphalt Roofing Manufacturer's Association) and RCI (Roof Consultants Institute). He has been a dedicated and active member in many of ARMA's Technical Committees, including the Joint ARMA/NRCA Quality Control Task Force, High Wind Task Force, Codes Steering Group, Ventilation Task Force, and helped to revise and update ARMA's well known Residential Asphalt Roofing Manual. He served as Chairman of the Wind-Research Subcommittee for two years. He is a member of the Construction Specifications Institute (CSI) and the American Institute of Chemical Engineers (AIChE).

**The physical shingle specimen of Exhibit B to the Snyder
Declaration was filed with the Amendment filed August 24,
2007**

Exhibit B



EXHIBT C to Snyder Declaration

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.: 10/807,018

Filed: March 23, 2004

For: Shingle With Sharply Defined Tabs Separated by Slots and Method of Making

Inventors: Husnu M. Kalkanoglu, et al

Examiner: John Frederick Parker

Art Unit: 1762

Atty. Doc. No.: 116-03

DECLARATION OF ROBERT L. JENKINS UNDER 37 C.F.R. §132

1. I, Robert L. Jenkins am one of the inventors of the invention referenced in this application. I am familiar with the manufacture of roofing products, including roll roofing, tiles and shingles in general, having spent over 25 years in the industry. My academic credentials include a college degree from Shippensburg State University. I have been an inventor on a number of patents. I am currently Principal Product Development Engineer, Exterior Products Group of CertainTeed Corporation, the assignee of the present application. I have no financial interest in the grant of any patent issuing on this application, notwithstanding my being an employee of CertainTeed Corporation, the Assignee of the invention in this case.

2. I have quality control and production experience with roofing products, as well as liaison experience with research and development, marketing, new product development and manufacturing regarding plant trial evaluations, product applications and raw materials. I have received various excellence awards for my work in improving roofing products, including shingles. I am very familiar with shingles made in accordance with this invention.

M2

3. In addition to working on the development of shingles made in accordance with this invention, I cooperated with and am knowledgeable about CertainTeed's marketing department activities, as these shingles approached their commercial release and initial sales to the industry.

4. The commercial release of information to the public about these shingles occurred on or about Memorial Day, 2004; specifically, on or about May 28, 2004. The actual first sales followed that and occurred on or about mid-June 2004.

5. I have been active in shingle design and manufacture for over 25 years. I am familiar with the Declaration of Richard Allan Snyder of August 17, 2007 in this case and with the commercial success of various shingles of CertainTeed over the years, specifically including that of the shingle of this invention and that of the comparison shingle also having commercial success which is referenced in paragraph 20 of the Snyder Declaration in this case.

The factors of promotion, advertising and marketing that took place for the shingle of this invention from prior to its commercial release and thereafter were essentially the same as those factors for the comparison commercially successful shingle of CertainTeed to which the shingle of this invention is compared in paragraph 20 of the Snyder Declaration.

6. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.


Robert L. Jenkins

DEC. 17, 2007
Date



US005664385A

United States Patent [19]

Koschitzky

[11] Patent Number: 5,664,385

[45] Date of Patent: Sep. 9, 1997

[54] SHINGLE WITH SLOTS AND METHOD OF MAKING SAME

[75] Inventor: Henry Koschitzky, Downsview, Canada

[73] Assignee: IKO Industries Ltd., Toronto, Canada

[21] Appl. No.: 430,085

[22] Filed: Apr. 27, 1995

[51] Int. Cl.⁶ E04D 1/12

[52] U.S. Cl. 52/559; 52/314; 52/315; 52/555

[58] Field of Search 52/559, 315, 554, 52/555, 557, 518, 314

[56] References Cited

U.S. PATENT DOCUMENTS

1,843,370 2/1932 Overbury
 2,199,760 5/1940 Schuetz 52/559 X

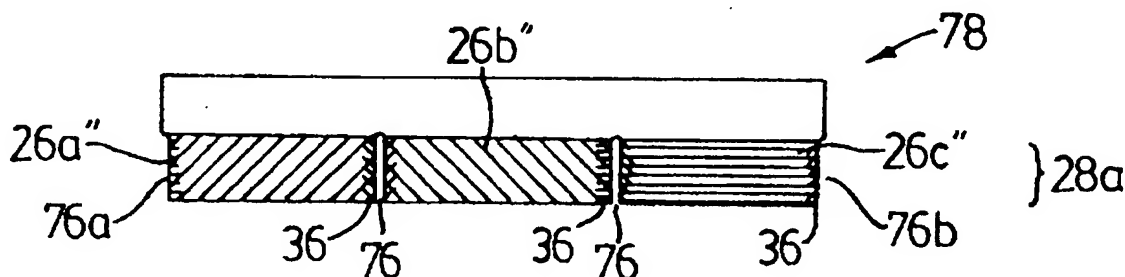
2,347,250 4/1944 Burnett 52/559
 4,352,837 10/1982 Kopenhaver 427/198
 5,186,980 2/1993 Koschitzky 427/187
 5,400,558 3/1995 Hannah et al. 52/559
 5,426,902 6/1995 Stahl et al. 52/559 X

Primary Examiner—Michael Safavi
 Attorney, Agent, or Firm—Bereskin & Parr

[57] ABSTRACT

A roofing shingle having a series of closely adjacent areas of granules, the areas being of differing colors. To achieve a sharp visual demarcation between the adjacent areas, narrow slots are formed in the transition areas between adjacent areas of granules. The slots extend substantially the entire height of the portion of the shingle which will be exposed when the shingle is mounted on a roof. Preferably the headlap area of each shingle is coated with dark colored granules which will show through the slots when the shingles are installed, to accentuate the visual demarcation between adjacent differently colored areas of granules.

5 Claims, 2 Drawing Sheets



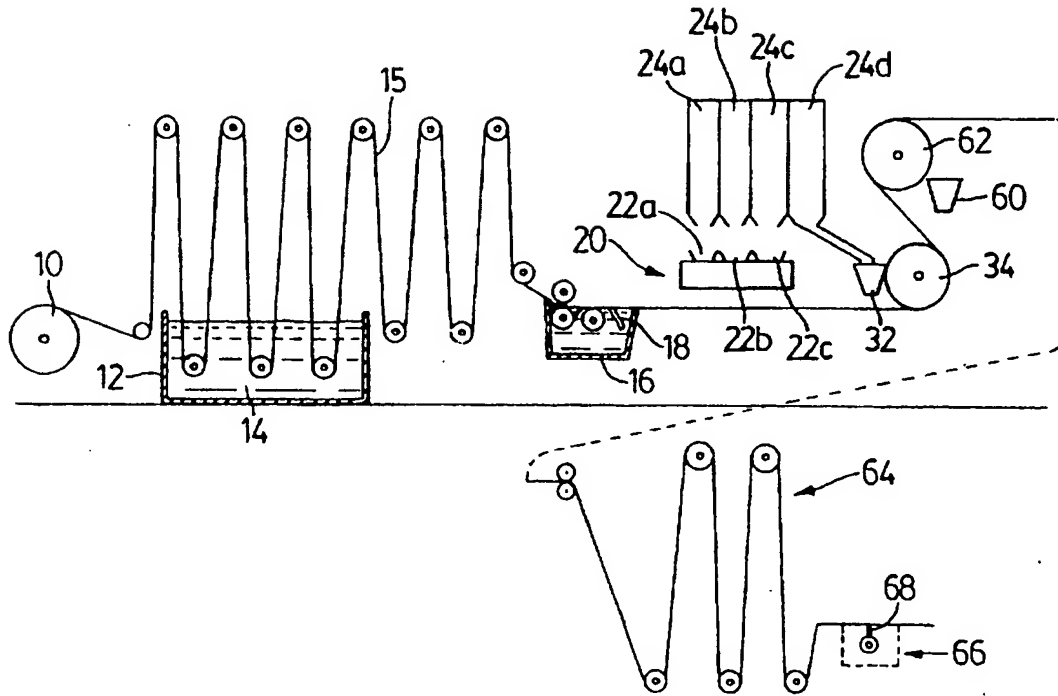


FIG. 1

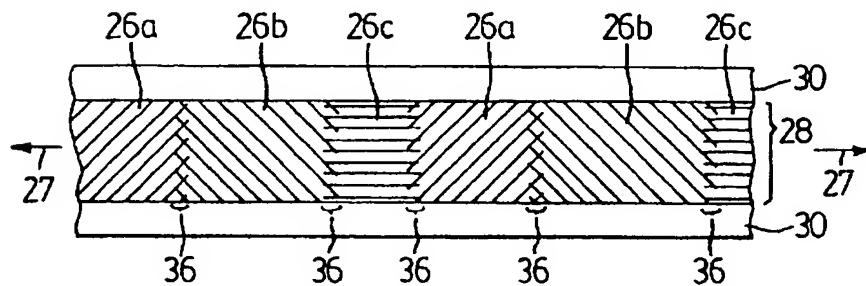


FIG. 2

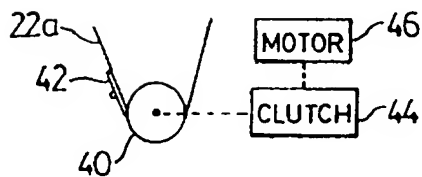


FIG. 3
(PRIOR ART)

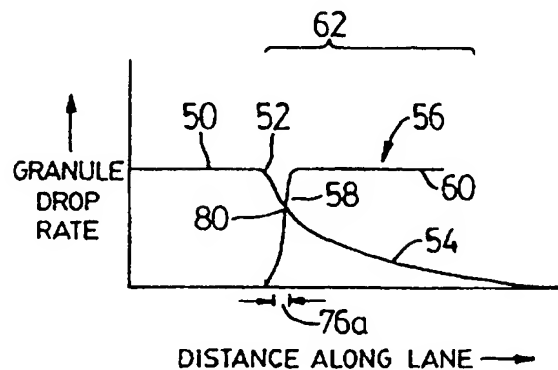


FIG. 4

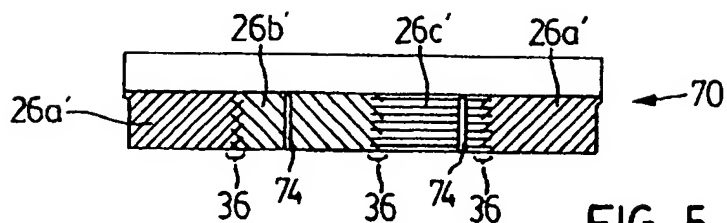


FIG. 5
(PRIOR ART)

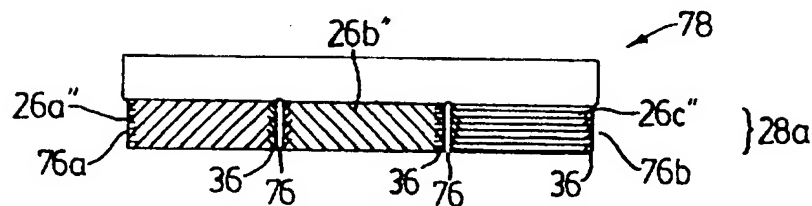


FIG. 6

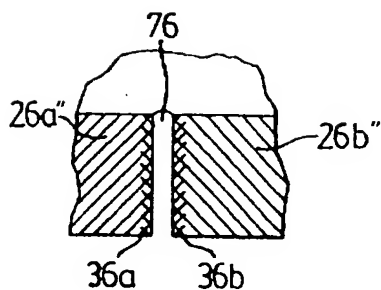


FIG. 7

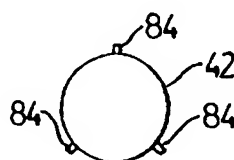


FIG. 8
(PRIOR ART)

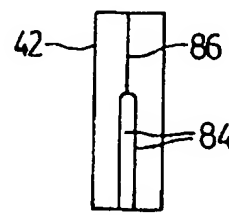


FIG. 9
(PRIOR ART)

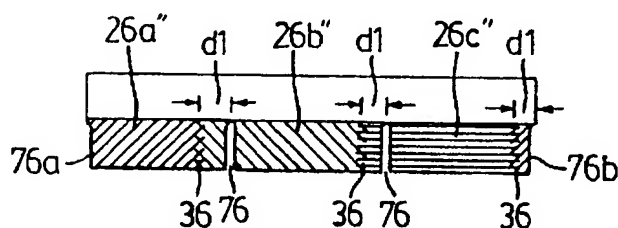


FIG. 10

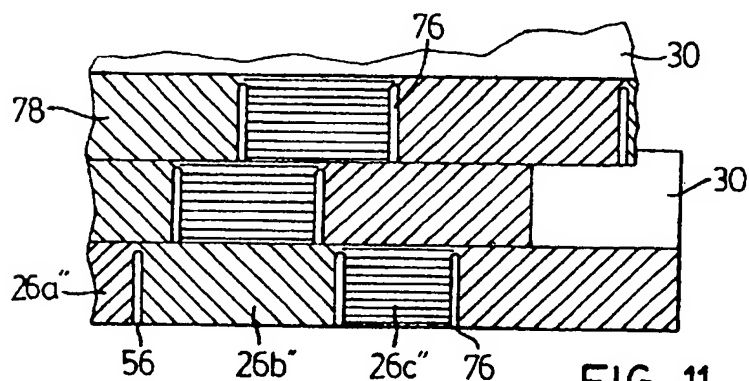


FIG. 11

SHINGLE WITH SLOTS AND METHOD OF MAKING SAME

FIELD OF THE INVENTION

This invention relates to roofing shingles and methods of making them. More particularly, it relates to roofing shingles in which the color of the surfacing layer changes at demarcation lines, and to methods of making such shingles.

BACKGROUND OF THE INVENTION

Roofing shingles are usually made by taking a continuous base sheet of material (e.g. organic felt, fiberglass mat or the like), saturating the base sheet in a base asphalt, covering it with a coating asphalt, and then embedding granules on the top side of the coated sheet. The granules protect the asphalt from breaking down by oxidation caused by ultraviolet rays. The finished sheet is then cut into lanes and then into desired lengths for shingles.

It is known to provide additional decoration for each shingle by providing a patterned appearance on its exposed surface. Commonly the pattern takes the form of a patch-like appearance, with a sequence of areas of granules of one color separated by areas of granules of a different color. Such an appearance is shown for example in U.S. design Pat. No. D309,027.

When a patch-like decorative appearance is created, it is desirable to have a sharp line of demarcation between the color in one area and the color in an adjacent area. Unfortunately, it is extremely difficult to achieve a sharp line of demarcation. The problem is that the granules which form the exposed surface of the shingle are normally dropped by a blender on a base sheet which is travelling at 500 to 600 feet per minute, or more than 8 feet per second. It is difficult to turn off the flow of granules of one color and to start the flow of granules of another color in a sufficiently short time to produce sharply demarcated edges between the two adjacent colors. For example, if it takes 0.01 seconds to start or stop dispensing granules, during this time the sheet will have travelled about one inch, so the transition between areas of different colors would be about one inch long.

Because of this problem, it has been common practice in the past to create the desired patch-like appearance by coating the entire surface of the base sheet with a first layer of granules, and then applying patches of asphalt and granules as a second layer over the first layer of granules. This has the advantage that the granules applied to the patches of asphalt adhere only to those patches, providing sharp transitions. U.S. Pat. No. 4,352,837 (Kopenhaver) and U.S. Pat. No. 5,186,980 (Koschitzky) both disclose methods of applying patches of asphalt and granules as a second layer to a first uniform layer of granules.

However applying second layers of asphalt and granules to the shingle has disadvantages in terms of increased cost. In addition the extra thickness can result in decreased flexibility of the shingle. Therefore it would be desirable to create the appearance of sharply demarcated areas of granules without the need for applying extra layers of asphalt and granules.

BRIEF SUMMARY OF THE INVENTION

Therefore it is an object of the invention in one aspect to provide a method of producing a shingle comprising:

- (a) applying a layer of hot coating asphalt to a base sheet to produce a sheet having a layer of said coating asphalt, said sheet having a lengthwise axis,

- (b) applying a series of closely adjacent areas of granules over said sheet, each area of granules being adhered by said asphalt, adjacent areas of granules being of differing appearance and being separated from each other by transition areas extending at right angles to said lengthwise axis,

- (c) and forming narrow slots in said transition areas between adjacent areas of granules, said slots being located between substantially all of said areas of granules and extending substantially the entire height of the portion of the shingle which will be exposed when the shingle is mounted on a roof, said slots providing a sharp visual demarcation between adjacent areas of granules.

In another aspect the invention provides a roofing shingle having a lengthwise axis and comprising: a base sheet having an exposed portion which will be visible when said shingle is mounted on a roof and a headlap portion which will be substantially covered by another shingle, a series of closely adjacent areas of granules extending along the length of said shingle and located on said exposed portion, said areas of granules being of different appearance from each other and being separated by transition areas which extend substantially at right angles to said lengthwise axis, said shingle having narrow slots between substantially all of said areas of granules, said slots being located in said transition areas between adjacent areas of granules and extending substantially the entire height of said exposed portion, said slots providing an accentuated visual demarcation between adjacent areas of granules.

Further objects and advantages of the invention will appear from the following description, taken together with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a diagrammatic view of a production line for producing roofing shingles according to the invention;

FIG. 2 is a plan view of two lanes of partly formed shingles according to the invention, with a decorative pattern applied to them;

FIG. 3 is a diagrammatic view showing a mechanism for dispensing granules from a hopper;

FIG. 4 is a graph showing the distribution of granules with distance along a lane;

FIG. 5 is a top view of a finished shingle produced from a lane like the FIG. 4 lane and having a conventional slot arrangement;

FIG. 6 is a plan view of a shingle like that of FIG. 5 but having a slot arrangement according to the invention;

FIG. 7 is an enlarged plan view of a portion of the shingle of FIG. 6;

FIG. 8 is an end view of a typical cutter used to cut slots in and to cross-cut shingles;

FIG. 9 is a plan view of the cutter of FIG. 8;

FIG. 10 is a plan view of a shingle like that of FIG. 6 but having misaligned slots; and

FIG. 11 is a plan view of shingles such as that of FIG. 6 applied to a roof.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Reference is first made to FIG. 1, which shows a production line for shingles. The production line of FIG. 1 is

conventional except as will be noted, and its conventional aspects are therefore only briefly described.

As shown, the FIG. 1 production line includes a roll 10 of organic felt or fiberglass mat. The felt is unrolled and dipped several times into a saturator tank 12 which contains a conventional saturant asphalt 14 at an elevated temperatures such as about 450° F. If a fiberglass mat is used, the mat typically passes over the saturator tank 12 and does not come in contact with the saturant 14. The sheet, indicated at 15, is then passed through a coating tank 16 where it is covered (top and bottom) with a coating asphalt at an elevated temperature such as about 400° F. The coating asphalt is usually mixed with a filler.

The coating asphalt helps to provide the shingle with its water shedding properties. A scraper 18 may be used to remove the excess coating asphalt from the back of sheet 15. The excess is returned to tank 16.

While the asphalt is still hot, the sheet 15 passes beneath a blender 20. The blender 20 contains hoppers 22a, 22b, 22c, each of which is supplied with granules of a different color or blend of colors from those of the other hoppers, from bins 24a, 24b, 24c respectively. While blender 20 is referred to in the trade as a blender, it is simply an on-off control for each of the hoppers.

The hoppers 22a, 22b, 22c apply a sequence of closely adjacent different color areas 26a, 26b, 26c to the sheet 15, as shown in FIG. 2. FIG. 2 shows two lanes of the sheet 15 (which sheet is normally many lanes wide). After the production of sheet 15 has been completed, it will be slit lengthwise along lines 27 into individual lanes (whose width is equal to the height of a shingle) and then crosswise into individual shingles. The colored areas 26a, 26b, 26c are normally applied only to the portions 28 of the sheet 15 which will be visible when the shingles made from the sheet are installed on a roof. The colored areas can each vary in length according to computer control. As will be discussed, preferably with the use of the invention the pattern of patches will repeat every shingle or every few shingles (the number of shingles over which the pattern repeats can be selected from one to several). The headlap portions 30 of sheet 15, which areas will normally be covered by another shingle when the shingles are on a roof, need not be covered by expensive colored granules.

After the sheet 15 passes under the blender 20, it travels beneath a spill hopper 32 supplied in part from bin 24d. Bin 24d typically is partitioned into two parts (not shown). One part contains colored granules which are of the same color composition as the spill which is created from excess colored granules dropped on the sheet, as described below. The second part contains uncolored granules (i.e. granules of natural color, which have not been dyed), which are much less costly than colored granules. Such granules may be naturally dark in color.

The sheet 15 then travels around a slate drum 34, at which time any excess granules which have not adhered to the sheet fall into spill hopper 32d. The spill hopper 32d is typically partitioned so that the blend of excess colored granules supplied by blender 20 (with any further colored granules needed being supplied from one part of bin 24d) falls onto the portion 28 of the sheet, and so that the uncolored (cheaper) granules from the other part of bin 24d fall onto the headlap portions 30 (which as mentioned are not normally visible when the shingle is on a roof).

The transverse transition areas between areas of differing color are indicated at 36 in FIG. 2. As shown diagrammatically, these transitions may typically be about

four to five inches in width, although this can vary (e.g. they can be smaller if the machine is operated more slowly).

The reason why the transition areas 36 exist is shown with reference to FIGS. 2 and 3. As shown in FIG. 2, each hopper such as hopper 22a has at its outlet a fluted roll 40 having a roughened surface, which when rotated carries a layer of granules out of the hopper 22a and drops it in a "curtain" across the moving sheet 15 which travels below the hopper. The thickness of the curtain or veil of granules is determined by an adjustable gate 42. The roll 40 is connected by a clutch 44 to a motor 46. The motor 46 runs constantly and the clutch 44 is actuated under computer control (not shown) to rotate roll 40 and hence drop a blend of granules when desired.

Although the clutch 44 is fast acting, the roll 40 cannot as mentioned start and stop instantaneously. Therefore, as shown in FIG. 4, when one roll 40 is turning, it drops a layer of granules as indicated by curve 50 in FIG. 4. When a signal arrives at point 52 to deactuate the clutch 44, the spill rate of granules drops off as indicated by portion 54 of curve 50. When sheet 15 is travelling at 500 to 600 feet per minute, curve portion 54 can be four to five inches long. As shown, curve portion 54 drops steeply at first and then tapers off. The portion of the sheet 15 covered by granules from the first drop during curve portion 54 is not available to be covered by granules from the next drop.

Similarly, when the same point 52 on the lane arrives under the next roll, that next roll is turned on to drop the next blend of colored granules, as indicated by curve 56. Since the roll for the next hopper cannot accelerate instantaneously, curve 56 is not a step function but instead has a rise time indicated by curve portion 58, until it reaches its full discharge rate as indicated by curve portion 60. Rise time 58 is usually quite short, e.g. about 0.5 inch at a sheet speed of 500 feet per minute. The overlap distance on sheet 15 where the spill of granules from one hopper diminishes and that from the next hopper rises is indicated by 62, and forms the transition areas 36 shown in FIG. 2. The lack of a sharp visual dividing line between adjacent different color areas of granules is highly undesirable. The solution achieved by the invention will be described shortly.

After the granules have been applied to the sheet 15, the sheet 15 travels under a hopper 60, where a mineral surfacing agent is conventionally applied to its back surface (from a supply not shown). Excess mineral surfacing agent is removed at drum 62 and is returned to hopper 60.

The sheet 15 then travels through a finish product looper 64 where it accumulates and is allowed to cool. It then enters a cutting section 66 where a conventional cutter 68 cuts the sheets lengthwise along lines 27 into individual lanes or shingle widths, and also cuts the shingles to desired lengths.

FIG. 5 shows a shingle 70 made from the lanes of FIG. 2. As shown, the shingle 70 has a sequence of colored areas 26a', 26b', 26c', each of different color from its neighbouring areas.

It is normal, when shingles are being cut from sheet 15, to cut slots in shingles, with the slots extending upwardly from the lower edge 72 of the shingle and oriented at right angles to the lengthwise direction of the shingle. Such slots are shown at 74 in FIG. 5. There are normally two (or more) slots 74 between the ends of each shingle (plus half a slot at each end), equally spaced from each other and dividing the shingle into three (or sometimes more) portions, commonly of equal length. The conventional slots 74 are provided primarily for decorative purposes. In the past, the slots have not taken into account the location of the patches, although

as shown in U.S. Pat. No. 5,186,980 (Koschitzky), a method is provided of ensuring that double layer patches do not occur at the location of the slots.

According to the present invention, slots indicated at 76 (FIG. 6) are located in all or substantially all of the transition areas 36 between adjacent colored areas. As shown for shingle 78 in FIG. 6, the slots 76 extend upwardly over substantially the entire height of the area 28a which will be exposed when the shingle is mounted on a roof. The slots 76 provide a sharp visual demarcation between adjacent colored areas and are particularly useful for this purpose when the headlap area 30 of the shingle which underlies them is covered with dark colored granules (black or nearly black), since this provides a vertical dark or shadow line between adjacent patches. The slots 76 are preferably located adjacent the location on the sheet 15 where the second drop begins, as indicated at 76a in FIG. 4, i.e. they preferably remove the part of the transition area where the two blends are approximately equal.

The reason why slots 76 form a sharp visual demarcation between adjacent colored areas will be apparent from a consideration of FIGS. 4 and 7. Even though the slots 76 may typically be between $\frac{1}{4}$ and $\frac{1}{2}$ inch in width, and although the transition areas 36 may be several inches in width, nevertheless if a slot 76 is located in a transition area 36 as described, and as indicated in FIGS. 4 and 7, it will remove portions of the transition area 36 where the granules from each blend 26a, 26b have approximately a 50:50 ratio (as indicated by point 80 in FIG. 4). Thus for example, the portion 36a of the transition area to the left of the left hand slot 76 in FIG. 7 will be predominantly determined by the color of blend 26a, while the portion 36b of the transition area to the right of the left hand slot 76 will be largely determined by the color of blend 26b. The portions 36a, 36b of the transition area which remain after the slot has been cut will not be noticed by the eye, because of the presence of the slot 76. Typically the slot may be approximately centered about the point 80 where the two adjacent blends have approximately a 50:50 ratio.

In order to form slots 76 in the transition areas between adjacent colored areas, it is necessary to synchronize the cross-cut knives of cross-cut cylinder 42 (which is used to cross-cut the shingles into lengths and also to cut the slots 76) with the locations of the patches. This can be accomplished in various ways. Since normally the position of the slots 76 is determined by the location of the knives on the cross-cut cylinder, and is fixed once a cross-cut cylinder has been installed, the simplest procedure is to synchronize the length of the patches or colored areas with the locations of the slots 76.

The cross-cut cylinder 42 (which is conventional) is shown in detail in FIGS. 8 and 9. The cross-cut cylinder 42 may typically have three pairs of knives 84 projecting from its circumference, spaced 120° apart, for forming the slots 76. In addition, from one of the pairs of knives 84 a further knife 86 extends across the width of the cylinder 42, to cross-cut the lane into lengths, i.e. into discrete shingles. If the cylinder 42 is 36 inches in circumference, then it will typically produce 36 inch shingles having two slots 76 between their ends, and half a slot 76a, 76b at each end, dividing the shingle into three "tabs". (The half slots will form a complete slot when adjacent shingles are laid side by side on a roof.) Of course the configuration of the cylinder 42 may be as desired, and it can for example be of larger circumference to provide a slot pattern (not necessarily uniformly spaced along the length of the shingles) extending and repeating over e.g. two shingles. Alternatively different

forms of knives can be used which can provide different slot patterns, to accommodate different patch patterns.

When the pattern of slots 76 has been determined, then the blender hoppers 22a, 22b, 22c are computer controlled to drop colored areas or patches 26a, 26b, 26c, etc. which are of the same length as the distance between respective slots. This can be achieved by simply controlling the timing and duration of operation of each roll 40 of the bins 22a, 22b, 22c.

Once the length of each colored blend drop has been established, the location of the transition areas between adjacent blends 26a, 26b, 26c must be synchronized with the location of the slots 76.

One method of obtaining the desired synchronization is to observe the moving strip 15 using a video camera and monitor having conventional freeze-frame capability (such as is commonly used to freeze the picture in a "picture-in-picture" in commercial television sets). As indicated in FIG. 10, the "frozen" or still frame will show immediately whether the pattern of cut slots 76 is misaligned with the pattern of transition areas 36 between adjacent colored areas. In FIG. 10 the misalignment is by distance d1. It is assumed that the pattern of colored areas, and hence the pattern of transition areas 36 between the colored areas, is (as mentioned) fixed and is the same for each shingle or repeats over a fixed number of shingles, and that the same pattern is used to control the actuation of the cutter 42 to cut the slots 76. (Although the pattern of colored areas or patches may be fixed, the colors of the granules forming those patches will normally vary, as controlled by the blends of granules dropped from bins 24a, 24b, 24c.)

If a misalignment e.g. by distance d1 occurs, then the length of each shingle can be adjusted slightly to correct the misalignment. Typically the circumference of the cutter cylinder 42 is slightly greater than the length of the shingles to be produced (e.g. the cutter cylinder circumference may be 38 inches for 36 inch shingles), and only 36 inches of sheet 15 are allowed to pass over the cutter cylinder 42 as the cylinder rotates through one revolution. In this way, if more or less of the sheet 15 is permitted to pass over the cutter cylinder 42 as it rotates through one revolution, the length of the shingle can be adjusted. Typically the maximum tolerance for the length of each shingle is $\frac{1}{16}$ inch (plus or minus).

Therefore, if the misalignment d1 is one inch, then the length of each shingle can be adjusted (in known fashion, by controlling the speed of the sheet 15 past the cutter cylinder) to lengthen or shorten each shingle by up to $\frac{1}{16}$ inch. This will effectively move or "crawl" the sequence of transition areas 36 to the left or to the right by $\frac{1}{16}$ inch for each successive shingle, so that after sixteen shingles have been cut, the sequence of transition areas 36 will have been shifted into alignment with slots 76. The shingle length can then be readjusted (by modifying the speed with which the sheet 15 passes over the cutter cylinder) to the correct length, so that the pattern of transition areas 36 ceases "crawling" or shifting with respect to the pattern of slots 76.

Once the pattern of transition areas has been aligned with the slots, any drift in the alignment will be relatively slow and will be shown by the television monitor. Because the transition is relatively slow, adjustments can be made manually if desired. Alternatively, the adjustment can be automatic, using a scanner which will detect the different colors and the transitions between them, and which will also detect the slots 76, to determine whether the slots and the transition areas are in alignment.

Other methods of aligning the slots and the transition areas may also be used.

The slots 76 may vary in width depending on the appearance desired and the sharpness of the transition areas 36. Although the slots will as mentioned normally be between about $\frac{1}{4}$ and $\frac{1}{2}$ inch wide, they can be as wide as one or two inches if desired, or even more, to provide a suitable decorative appearance for the roof.

Normally the slots 76 will be uniformly spaced, but this is not essential.

FIG. 11 shows a set of shingles such as the shingle 78 of FIG. 4 in place on a roof. When the shingles are mounted on a roof, the headlap area 30 of each shingle is covered by the next higher shingle, and only the slots 76 and the colored areas 26a", 26b", 26c" are visible. As mentioned, even if each slot 76 does not cover the entire width of the transition area between adjacent colored areas, it will still form (particularly from a distance) a sharp visual demarcation between adjacent colored areas. The visual effect will be particularly noticeable when the granules beneath the slots 76 (in the headlap area of the next lower shingle) are of a color which contrasts with the colors of the colored areas 26a", 26b", 26c".

While preferred embodiments of the invention have been described, it will be appreciated that various changes can be made within the spirit of the invention.

I claim:

1. A roofing shingle having a lengthwise axis and comprising; a base sheet having an exposed portion which will be visible when said shingle is mounted on a roof and a headlap portion which will be substantially covered by another shingle, a series of closely adjacent patches of granules extending along the length of said shingle and located on said exposed portion, said patches of granules being of different color from each other and being separated by transition areas which extend substantially at right angles to said lengthwise axis, each transition area thereby being bordered by a patch on each side thereof, the patch on each

side of a transition area being a neighboring patch, each transition area containing granules from each of its neighboring patches, each transition area having a first border area adjacent one of its neighboring patches and a second border area adjacent the other of its neighboring patches, said first border area containing a high concentration of granules from said one neighboring patch, and a low concentration of granules from said other neighboring patch, said second border area containing a high concentration of granules from said other neighboring patch and a low concentration of granules from said one neighboring patch, each transition area also containing an intermediate portion between said border areas where granules from both said neighboring patches are present in substantial concentrations, said shingle having narrow slots between substantially all of said patches of granules, said slots being located in said transition areas between adjacent patches of granules and extending substantially the entire height of said exposed portion, said slots extending within said intermediate portions of said transition areas but said transition areas being of greater width than said slots so that there is a portion of a transition area on each side of each slot, said slots thereby providing an accentuated visual demarcation between adjacent patches of granules.

2. A shingle according to claim 1 wherein said headlap portion is covered with granules of dark color, so that when said shingles are mounted on a roof said dark color will be visible through said slots to accentuate the visual transition between adjacent areas of granules.

3. A shingle according to claim 1 wherein said slots are between approximately $\frac{1}{4}$ and $\frac{1}{2}$ inch in width.

4. A shingle according to claim 1 wherein said slots are uniformly spaced apart along the length of said shingle.

5. A shingle according to claim 1 wherein said shingle has a pair of ends and wherein there is a one-half slot at each end of said shingle.

* * * * *

SHINGLE WITH SHARPLY DEFINED TABS SEPARATED BY SLOTS AND METHOD OF MAKING

Background of the Invention

Shingles of the type having a butt portion and a tab portion, with slots separating tabs of the tab portion of the shingle, are known in the art. US patents 6,212,843 and 6,467,235 represent examples of such shingles and their method of manufacture.

It is also known to manufacture shingles, either of the single layer type or of the laminated type, comprising two or more layers of complete shingle material, wherein each layer of complete shingle material includes a base web of reinforcing material that is impregnated with and coated with an adhesive material, generally asphalt, which hardens, and with granules applied to an upper surface of the shingle material.

Generally, the shingles are made by having a base web, often of fiberglass construction, as a reinforcing material, impregnated with the bitumen or other adhesive material, as part of a continuous process, and in which the granules are dropped onto the continuous sheet of impregnated and coated material, to adhere thereto, with the granules being dropped from granule applicators. Often, there are a plurality of granule applicators, which apply granules of a certain preselected aesthetic onto different portions of the shingle-forming layer passing therebeneath. For example, the granule applicators may contain granules of different colors, different shadings of the same color, different blends of color or shading, etc.

It is desirable to have adjacent tabs separated by slots, wherein the tabs have some form of contrast or aesthetic from tab-to-tab. The contrast may be in the form of different shades of the same color, different colors from tab-to-tab, different blends of colors or shading from tab-to-tab, or of other variations.

Often, the goal of such manners of shingle manufacture is to provide shingles that, once they are laid up on a roof, give the appearance of individual tiles, or individual slates, as may be desired, rather than appearing as tabs of a manufactured shingle.

Because control of the dropping of granules from a given applicator may not be absolutely or precisely perfect, where shingles from a given hopper-type applicator may be intended to be dropped in a preplanned tab area of a shingle-forming layer passing therebeneath, and wherein granules from a different hopper applicator may be intended to be dropped on an adjacent tab area, there is often an intermediate zone or area, between adjacent tab areas, where there is a blend of granules from one applicator with granules from another applicator.

Summary of Invention

The present invention is directed to providing a shingle and a method of making a shingle in which adjacent tabs can be sharply defined, in which granules of a given aesthetic are applied to one tab area and granules of another aesthetic are applied to an adjacent tab area, and which any mixture of granules from both of those areas that are applied to an intermediate area between those two tab areas, are removed by removing the entire intermediate area, to yield two distinct tabs.

Accordingly, it is an object of the present invention to provide a shingle and a method of making the shingle, in which granules of more than one aesthetic are applied to a shingle-forming layer, each in a different area, and wherein a mixture of granules of both aesthetics are applied in an intermediate area, which intermediate area is then removed to yield adjacent shingle tabs that are sharply defined, each having granules only of its own predetermined aesthetic.

It is another object to accomplish the above objects, wherein the removal takes place by cutting generally transverse slots between tab areas such that each remaining tab area yields visually sharp, precise starting and ending delineations of its own aesthetic.

N. **RELATED PROCEEDINGS APPENDIX**

There are no related proceedings.

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There are no related proceedings.